IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1.   (Currently amended) A method of classifying data in a data classifier deployed in a network device, the network device including a plurality of ports coupled to a heterogeneous communications network, the method comprising the steps of:

   receiving a data packet at one of the plurality of ports of the network device, the data
      packet including a first portion;

   receiving the first portion of the data packet at the data classifier;

   extracting a plurality of tags and a logical port identifier (ID) from the first portion,
      the plurality of tags including one or more of a flow tag, a media access control
      destination address tag, a media access control source address tag, a priority tag
      and a balancer tag ;

   determining a flow ID representative of a network service on the heterogeneous
      communications network associated with the data packet, the step of determining
      the flow ID including a flow tag lookup process, a media access control
      destination address lookup process, a media access control source address learning
      process and an output flow ID selection process;

   determining a priority ID;

   combining the flow ID and the priority ID to create a queue ID, wherein the flow tag
      lookup process receives as inputs the flow tag and the logical port ID and provides
      as outputs a first output flow ID to the output flow ID selection process, a
      customer ID to both the media access control destination address lookup process
      and the media access control source address learning process and an input flow ID
      to the media access control source address learning process.

2.   (Original) The method of claim 1, wherein the step of receiving the data packet includes checking whether a packet type of the data packet matches a port type of the receiving one of the plurality of ports.

3.   (Original) The method of claim 2, wherein the step of checking further includes generating a type error tag if the packet type does not match the port type.

4.   (Original) The method of claim 1, wherein the step of extracting the plurality of tags includes storing the tags in a tag memory.

5.   (Original) The method of claim 4, wherein the step of determining a flow ID includes, first, reading one or more of the plurality of tags from the tag memory.

6.   (Cancelled).

7.   (Currently amended) The method of ~~claim 6~~ claim 1, wherein the flow tag is used to derive one or more of an input flow ID, an output flow ID and a customer ID.

8.   (Original) The method of claim 1, wherein the network service includes one or more private line service or a private local area network service.

9.   (Original) The method of claim 1, wherein the step of determining the flow ID uses one or more of the plurality of tags and the logical port ID.

10.   (Original) The method of claim 9, wherein the plurality of tags includes one or more of a flow tag, a media access control destination address tag and a media access control source address tag.

11.   (Original) The method of claim 10, wherein the flow tag is used to derive one or more of an input flow ID, an output flow ID and a customer ID.

12-13. (Cancelled).

14.   (Currently amended) The method of ~~claim 13~~ claim 1, wherein the media access control destination address lookup process:

    receives as inputs the customer ID and the media access control destination address tag;

    accesses a hash table; and

    provides as outputs a second output flow ID and an output flow ID selector to the output flow ID selection process.

15.   (Original) The method of claim 14, wherein the media access control source address learning process:

    receives as inputs the customer ID, the input flow ID and the media access control source address tag;

    accesses the hash table; and

    provides as output learned flow parameters to the hash table.

16.   (Original) The method of claim 15, wherein the output flow ID selection process:

      receives as inputs the first output flow ID, the second output flow ID and the output

          flow ID selector; and

      provides as output the flow ID.

17.   (Original) The method of claim 1, wherein the step of determining the flow ID further includes:

      generating a balanced flow ID; and

      using the balanced flow ID as the flow ID for creating the queue ID.

18.   (Original) The method of claim 17, wherein the step of generating the balanced flow ID uses one or more of the plurality of tags.

19.   (Original) The method of claim 18, wherein the plurality of tags includes a balancer tag.

20.   (Original) The method of claim 1, wherein the step of determining the priority ID uses one or more of the plurality of tags.

21.   (Original) The method of claim 20, wherein the plurality of tags includes a priority tag.

22.   (Currently amended) A data classifier deployed in a network device, the network device including a plurality of ports coupled to a heterogeneous communications network, comprising:

      a tag extraction unit capable of extracting a plurality of tags and a logical port

          identifier (ID) from a first portion of a data packet, the data packet having been

          received at one of the plurality of ports of the network device, wherein the

          plurality of tags includes one or more of a flow tag, a media access control

          destination address tag, a media access control source address tag, a priority tag

          and a balancer tag; and

      a tag lookup engine including a flow tag lookup coupled to the tag extraction unit, a

          media access control destination address lookup coupled to the tag extraction unit,

          the flow tag lookup and a hash table, a media access control source address

          learner coupled to the tag extraction unit, the flow tag lookup and the hash table

          and an output flow ID selector coupled to the flow tag lookup, the media access

          control destination lookup and the queue ID selector, wherein the tag lookup

engine is coupled to the tag extraction unit and capable of:

determining a flow ID from one or more of the plurality of tags and the logical

port ID, the flow ID representing a network service on the heterogeneous

communications network associated with the data packet; and

determining a priority ID; and

a queue ID generator coupled to the tag lookup engine and capable of combining the

flow ID and the priority ID to create a queue ID.

23. (Original) The device of claim 22, wherein the tag extraction unit includes a tag checker capable of determining whether a packet type of the data packet matches a port type of the receiving one of the plurality of ports.

24. (Original) The device of claim 23, wherein the tag checker is further capable of generating a type error tag if the packet type does not match the port type.

25. (Previously presented) The device of claim 23, wherein the tag checker includes a tag memory capable of storing the plurality of tags.

26. (Original) The device of claim 25, wherein the tag lookup engine is further capable of accessing the one or more of the plurality of tags in the tag memory.

27. (Cancelled)

28. (Currently amended) The device of ~~claim 27~~ claim 22, wherein the flow tag is used to derive one or more of an input flow ID, an output flow ID and a customer ID.

29. (Original) The device of claim 22, wherein the network service includes one or more private line service or a private local area network service.

30. (Cancelled)

31. (Original) The device of ~~claim 30~~ claim 22, wherein the flow tag lookup is capable of:
receiving the flow tag and the logical port ID as inputs; and
providing as outputs:

a first output flow ID to the output flow ID selector;

a customer ID to both the media access control destination address lookup and

the media access control source address learner; and

an input flow ID to the media access control source address learner.

32.   (Original) The device of claim 31, wherein the media access control destination address lookup is capable of:

  receiving the customer ID and the media access control destination address tag as inputs;

  accessing the hash table; and

  providing a second output flow ID and an output flow ID selector to the output flow ID selector as outputs.

33.   (Original) The device of claim 32, wherein the media access control source address learner is capable of:

  receiving the customer ID, the input flow ID and the media access control source address tag as inputs;

  accessing the hash table; and

  providing learned flow parameters to the hash table as output.

34.   (Original) The device of claim 33, wherein the output flow ID selector is capable of:

  receiving the first output flow ID, the second output flow ID and the output flow ID selector as inputs; and

  providing the flow ID to the queue ID generator as output.

35.   (Original) The device of claim 34, wherein the tag lookup engine further includes a priority tag lookup coupled to the tag extraction unit, the output flow ID selector, and the queue ID generator.

36.   (Original) The device of claim 35, wherein the priority tag lookup is capable of:

  receiving the priority tag and flow ID as inputs; and

  providing the priority ID to the queue ID generator as output.

37.   (Original) The device of claim 36, wherein the tag lookup engine further includes a balancer tag lookup coupled to the tag extraction unit, the output flow ID selector and the queue ID generator.

38.   (Original) The device of claim 37, wherein the balancer tag lookup is capable of:

  receiving the balancer tag and the flow ID as inputs; and

  providing a balanced flow ID to the queue ID generator as output.

39.   (Original) The device of claim 38, wherein the queue ID generator is further capable of combining the balanced flow ID and the priority ID to create the queue ID.

40.   (Original) The device of claim 39, wherein the data classifier is fabricated on a single die.

41.   (Original) The device of claim 40, wherein the data classifier is fabricated on a single functional block on the single die.

42.   (Original) The device of claim 22, wherein the data classifier is fabricated on a single die.

43.   (Original) The device of claim 42, wherein the data classifier is fabricated on a single functional block on the single die.

44-45. (Cancelled)